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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/847,570 | 05/02/2001 | Steve Wai Leung Yeung | 25821P032 | 5623 |

8791 7590 04/12/2007
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| EXAMINER |
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NGUYEN, KIMNHUNG T

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| ART UNIT | PAPER NUMBER |
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2629

| SHORTENED STATUTORY PERIOD OF RESPONSE | MAIL DATE | DELIVERY MODE |
|--|------------|---------------|
| 3 MONTHS | 04/12/2007 | PAPER |

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

09/847,570

Applicant(s)

YEUNG ET AL.

Examiner

Kimnhung Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on RCE filed on 10/10/06.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 5-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 5-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>10/10/06</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after allowance or after an Office action under *Ex Parte Quayle*, 25 USPQ 74, 453 O.G. 213 (Comm'r Pat. 1935). Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, prosecution in this application has been reopened pursuant to 37 CFR 1.114.

Applicant's submission filed on 10/10/06 has been entered.

2. This Application has been examined. The claims 1, and 5-21 are pending. The examination results are as following.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-3 and 5-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Masazumi (US 6,414,669) in view of Takahashi et al. (US 6,061,042).

As per claims 1, 5, and 6, Masazumi teaches a driving method for a liquid crystal display (LCD) device in which a liquid crystal exhibiting a cholesteric phase is sandwiched between two

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substrates having electrodes arranged in a matrix form on their substrates (col. 1, lines 12-17), providing pixels arranged in a matrix array (see abstract, line 7), providing a reset pulse and a select pulse signal is applied for every line (plurality of selection pulses) to provide pulse voltages of the waveforms (a), (b) and (c) shown in fig. 5 and the resulting (f) waveform applied to the liquid crystal (col. 23, line 60 to col. 25, line 3). Further, the selection pulse taught by Masazumi may consist of a pipeline and non-pipeline arrangement and also of partial rows that are pipelined and non-pipelined (fig. 5).

Masazumi does not teach that wherein the selection pulses comprising amplitude modulated selection pulses of variable amplitudes of determined pulse width to provide multiplex addressing resultant driving waveform(s).

Takahashi et al. teaches the selection pulses comprising amplitude modulated selection pulses of variable amplitudes of determined pulse width (see col. 9, lines 23-28) and therefore, the multiplex addressing resultant driving waveform.

It would have been obvious to one of ordinary skill in the art to utilize the selection pulses of variable amplitudes of determined pulse width as taught by Takahashi et al. into the device of Masazumi for producing the claimed invention because it would provide the maximum number of gray levels may therefore be obtained to be as many as the number of feasible pulses (see col. 9, lines 32-34).

As per claims 7 and 8, Masazumi teaches a reset pulse signal (col. 23, lines 65-66) and a reset voltage period (col. 10, line 61) but does not explicitly that the reset pulses are no smaller in value than the reset voltage and the reset pulses are greater than the reset voltage. It would have been obvious to one of ordinary skill in the art to specifically utilize the values of the reset pulses

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as claimed because it would obtain the needed amount of voltages for a cholesteric liquid crystal material to select the display state of the liquid crystal in every pixel thereby improving the matrix driving.

As per claims 9 and 10, Masazumi does not teach a multiplex that selectively changes the signal in accordance with the switching control signal and wherein the selection pulses of the multiplex driving waveform can be arranged in groups selected from clustering together, interleaving with other rows, and a combination of said clustering and said interleaving.

Takahashi et al. discloses in fig. 12D and 12E, a multiplex that selectively changes the signal with the switching control signal and wherein the selection pulses of the multiplex driving waveform (see col. 11, lines 7-14) can be arranged in groups selected from clustering together,

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement the multiple selective changes the signal with switching control signal and wherein the selection pulses of the multiplex driving wave form as taught by Takahashi et al. into the system of Masazumi for producing the claimed invention because this would provide the drive voltage wave forms of gray level modulation signals which are applied to liquid crystal cell (see col. 11, lines 7-9).

As per claim 11, Masazumi teaches driving waveform(s) that have polarity inversion after each pulse in the driving waveform as claimed (col. 16, lines 29, 30, fig. 13).

As per claim 12, Masazumi teaches voltages opposite in polarity but equal in magnitude that are constantly applied to the liquid crystal layer during the deselect (frame) period (col. 16, lines 52-54).

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As per claim 13, Masazumi teaches at least some of the pulses of the driving waveform that are polarity reversed in the frame period by applying positive and negative voltages that are applied alternately (col. 16, lines 61-63).

As per claim 14, Masazumi teaches a method wherein the polarity of a succeeding pulse of the driving waveform is opposite the polarity of the immediately preceding (instant) pulse as claimed (see $\pm V_c/2$ in fig. 16).

As per claim 15, Masazumi teaches a selection pulse for each line (multiple selection lines) wherein the pulses of a succeeding frame periods is different from the instant pulse (see $\pm V_c/2$ in fig. 18).

As per claim 17, Masazumi teaches cases where gray scale is reproduced by varying the voltage value of the waveform (s) (col. 16, line 67 to col. 17, line 1).

As per claims 18 and 19, Masazumi teaches in the waveform during the reset period a voltage V_{th1} for setting the liquid crystal into the homeotropic state that is first applied for a duration of time t_0 and then the voltage is held below a threshold voltage V_{th2} for a duration of time t_4 for setting the liquid crystal into the planar state. Further, Masazumi teaches a voltage greater than V_{th2} and smaller than V_{th1} to cause the liquid crystal in the planar state to change to the focal conic state. To achieve gray scale levels, the entire reset period $t_3+t_4+t_5$ can be made shorter than t_1 (col. 14, lines 20-41).

As per claims 16 and 20, Masazumi teaches a resulting (f) waveform (common waveform) applied to the liquid crystal which is a combination of waveforms as claimed (fig. 5).

As per claim 21, claim 21 is similar claims 1 and 9 and discussed above.

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Correspondence

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kimnhung Nguyen whose telephone number (703) 308-0425.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **RICHARD A HJERPE** can be reached on **(703) 305-4709**.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks

Washington, D. C. 20231

Or faxed to:

(703) 872-9314 (for Technology Center 2600 only).

Hand-delivery response should be brought to: Crystal Park II, 2121 Crystal Drive, Arlington, VA Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.


Kimnhung Nguyen
Patent Examiner
March 18, 2007